United States Coast Guard

ALTERNATE COMPLIANCE PROGRAM
TANKSHIP (CHEMICAL/GAS)
EXAMINATION BOOK

Name of Vessel	
Official Number	**ACP Class Society**
Date Completed	**Location**
Vessel Built in Compliance with SOLAS: 60 74 74/78 N/A	
Exam Type Annual Reexamination	
Inspectors **1.** _____ **3.** _____ **2.** _____ **4.** _____	

CG-840 ACP TS(ChemGas)
Rev. 1/01

Deficiency Summary Worksheet:

Name of Vessel **VIN**

Deficiency	MSIS Code	Req't. Issued / Date Completed

Deficiencies identified should be listed with MSIS codes. At completion of inspection/examination, any outstanding deficiencies shall be entered in MIDR or PSDR as appropriate. All deficiencies found (outstanding and completed) shall be entered in the Deficiency Summary. Worklist items, which serve only as memory joggers to complete inspection/examination (e.g., test emergency fire pump), should not be coded as deficiencies.

MSIS Codes for Deficiencies:

BS	Ballast	**DC**	Dry Cargo	**IC**	I/C Engine
BI	Bilge	**ES**	Electrical	**LS**	Lifesaving
BA	Boiler, Aux.	**FF**	Firefighting	**MI**	Miscellaneous
BM	Boiler, Main	**FL**	Fuel	**NS**	Navigation
CS	Cargo	**GS**	General Safety	**PP**	Propulsion
DM	Deck Machinery	**HA**	Habitation	**SS**	Steering
DL	Doc., Lics., Pmts.	**HU**	Hull		

Use of ACP Tankship (Chemical/Gas) Examination Book:

This examination book is intended to be used as a job aid by Coast Guard marine inspectors during annual examinations and reexaminations of U.S. flagged vessels participating in the Alternate Compliance Program (ACP). This book contains an extensive list of possible examination items. It is not, however, the Coast Guard's intention to "inspect" all items listed. The marine inspector must verify that the vessel and its crew are in substantial compliance with international conventions and the requirements of the ACP class society's U.S. Supplement. The depth and scope of the examination must be determined by the marine inspector's observation of the vessel, its equipment, and its crew.

This document does not establish or change Federal laws or regulations. References given are only general guides. Refer to IMO publications, CFR's, the ACP class society's U.S. Supplement, NVIC's, or any locally produced cite guides for specific regulatory references. Although not all items in this book are applicable to all vessels, Section 1 should be filled out in its entirety at each examination and reexamination.

NOTE: *Guidance on how to examine ACP vessels can be found in MSM Volume II, Chapter B9: Alternate Compliance Program, and NVIC 2-95, Change 1. All MSM cites listed in this book refer to MSM Volume II unless otherwise indicated.*

Guide to Examinations:

☐ Annual examination and reexamination

◇ Annual examination only

○ Expanded examination as required

These three stages are only a general guide. Each marine inspector should determine the depth of the examination necessary. A checked box should be a running record of what has been examined by the marine inspector. It does not imply that the entire system has been examined or that all or any items are in full compliance.

NOTE: *A reexamination normally includes an examination of the vessel's documents, certificates, and licenses, in addition to a "walk-through" of the vessel.*

Prohibited Chemical Cargoes:

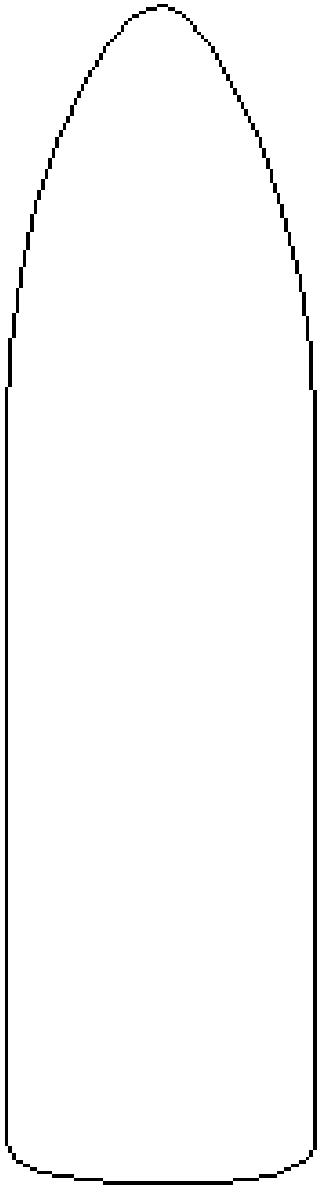
The following cargoes have been determined to be too hazardous to be carried in U.S. waters:

1. Acrolein
2. Chlorine (on self-propelled vessels)
3. Ethylenimine
4. Hydrofluoric Acid
5. Hydrogen
6. Hydrogen Chloride
7. Hydrogen Fluoride
8. Methylcyclopentadienyl Manganese Tricarbonyl
9. Nitric Acid (in concentrations > 70%)
10. Nitrogen Tetroxide
11. Oxygen
12. Phosphorus Trichloride
13. (Beta) Propiolactone

Table of Contents:

(continued next page)

Vessel Layout:



- Double hull / bottom / sides
- Ballast tanks (SBT/CBT)
- Chemical type: I II III
- Tank arrangement
- Deckhouse location
- External / internal framing
- Layout of pumps – type

IMO Applicability Dates:

Reference	Date
SOLAS 1960	26 MAY 65
SOLAS 1974	25 MAY 80
1978 Protocol to SOLAS 1974	01 MAY 81
1981 Amendments (II-1 & II-2)	01 SEP 84
1983 Amendments (III)	01 JUL 86
Various additional amendments to SOLAS	
MARPOL 73/78 Annex I	02 OCT 83
MARPOL 73/78 Annex II	06 APR 87
MARPOL 73/78 Annex III	01 JUL 92
MARPOL 73/78 Annex V	31 DEC 88
IBC Code	After 01 JUL 86
BCH Code	Prior to 01 JUL 86
IGC Code	After 01 JUL 86
IGC Code (for existing vessels)	Prior to 01 JUL 86
COLREGS 1972	15 JUL 77
Various additional amendments to COLREGS	
Load Line 1966	21 JUL 68
STCW 1978	28 APR 84
1991 Amendments	01 DEC 92
1994 Amendments	01 JAN 96
1995 Amendments	01 FEB 97

Inert Gas Systems (IGS):

NOTE: *Requirements and guidance on inert gas systems is detailed in 46 CFR 32.53, SOLAS 74/78 II-2/62, and MSM Volume II, Chapter C5.*

○ Type of system installed

Flue gas

Gas generator

Nitrogen bottles

○ Sampling / testing of gas pad

Tank Number	% Oxygen	OR	% Nitrogen
Vessel is gas-free or not carrying cargoes required to be inerted			

○ Proper operation of IGS components

- Blowers
  - Free from excessive bearing noise and vibration
  - Remote shutdown for IGS blower
- Scrubber room ventilation
- Primary and alternate saltwater scrubber pumps
- Deck seal
  - Water level
  - Automatic filling
  - Open drain cocks on IG main
- Remote operated / automatic control valves
  - Open or closed indicator
- Gauges
  - Calibration of inline O_2 analyzing equipment
  - Check O_2 and pressure level recordings
- Portable instruments calibrated
- IG generator
  - Combustion control system and fuel supply
  - Interlocking of soot blowers (IGS automatically shuts down when soot blowers engaged)

Notes: _____

_____

_____

_____

Vessel Information:

Classification Society	
ISM Issuer: Same as above? Yes No If not the same, which Recognized Organization? _____ ***NOTE:*** *The period of validity for ISM documents should correspond to the following list. If they do NOT, ISM documents should be further investigated.* ☐ *5 years = Full term (SMS and DOC)* ☐ *12 months = Interim (DOC)* ☐ *6 months = Interim (SMC)* ☐ *5 months = Short term (SMC)*	
Date of Last Class Survey	
Outstanding conditions of class or non-conformities	
Last Port of Call	Next Port of Call
Cargo	Current Operations

Is pumproom gas-free?	Yes	No	N/A

Call Sign	No Change (VFID)
Gross Tons	No Change (VFMD)
Built Date (use delivery date)	No Change (VFCD)
Overall Length (in feet)	No Change (VFMD)

Vessel Description:

Bulk Liquid Carrier

Compress Gas Hazardous Material Carrier

Liquefied Gas Carrier

Other _____

- ○ Human Factors — STCW Table A-III
  - Oil and oily mixtures — MARPOL Ax. I
    - Responsible officer familiar with handling of sludge and bilge water
    - Quantity of residues generated
    - Capacity of holding tanks
    - Capacity of oil water separator
    - Note any inadequacies in reception facilities used; advise master to report these to flag state
  - Garbage — MARPOL Ax. V
    - Note any inadequacies in reception facilities used; advise master to report these to flag state
    - Crew familiar with Annex V requirements

Machinery Spaces:

- ○ Test communication between navigating bridge and machinery space — SOLAS 74/78 II-1/37
  - Two means, one of which must be an engine order telegraph
- ○ Emergency source of electrical power — SOLAS 74/78 II-1/43, SOLAS 74/78 II-1/44
  - Location
  - Generator and/or batteries tested under load
  - Emergency lighting
- ○ Main engine / vital auxiliaries (spot-check) — SOLAS 74/78 II-1/27
  - F/O pumps / piping
  - S/W pumps / piping
  - J/W pumps / piping
  - L/O pumps / piping
  - Piston cooling pumps / piping
  - Air compressors / receivers
  - Fuel / oil purifiers
  - H/O heaters / transfer pump

Notes: _____

Name of Certificate	Issuing Agency	ID #	Port Issued	Issue Date	Exp. Date	Endors. Date
International Oil Pollution Prevention w/Form B (IOPP) No Change						
IOPP for NLS Cargoes No Change						
Certificate of Fitness (COF) No Change						
International Tonnage (ITC) No Change						
Safety Management (SMC) No Change						
Document of Compliance (DOC) No Change						
Subchapter O Endorsement (SOE) No Change	USCG					

- ○ Emergency communication equipment
  - 2-way VHF radiotelephone apparatus — SOLAS 74/78 III/6.2
  - Radar transponders
  - Survival craft EPIRBs
  - Onboard communication and alarm system — SOLAS 74/78 III/6.4
- ○ Line-throwing appliance — SOLAS 74/78 III/17.49
  - Specifications and equipment
- ○ Pilot ladders and hoists in good condition — SOLAS 74/78 V/17
- ○ Distress signals — SOLAS 74/78 III/6.3
  - 12 red rocket parachute flares

Fire Protection:

- ○ Structural fire protection — SOLAS 74/78 II-2/42, 43, 44, 46, 47, 49, & 50
  - Bulkheads and decks meet applicable fire integrity requirements
  - Openings (e.g., doors, ductwork, electrical wires, piping, etc.) constructed so that they do not destroy fire resistance of bulkheads
  - Manual and automatic fire doors examined / tested
- ○ Fire detection, fire alarm, and automatic sprinkler systems fitted where required and operating properly — SOLAS 74/78 II-2/52
- ○ Ventilation systems — SOLAS 74/78 II-2/48
  - Main inlets and outlets of all ventilation spaces can be closed from outside ventilated space
  - Power ventilation capable of being shutdown from outside ventilated space
- ○ Fire pumps — SOLAS 74/78 II-2/4
  - Fire main activated; water pressure satisfactory (energize forward-most and highest hydrants)

Notes: _____

Pollution Prevention Records:

- ☐ Current pollution prevention records
  - Person-in-charge — 33 CFR 155.700
  - Transfer equipment tests and inspections — 33 CFR 156.170
  - Declaration of Inspection — 33 CFR 156.150
- ◇ Oil record book (spot-check) — MARPOL Ax. I/20, 33 CFR 151.25
  - Each operation signed by person-in-charge
  - Each complete page signed by master
  - Book maintained for 3 years
- ◇ Shipboard oil pollution emergency plan — MARPOL Ax. I/26.1, 33 CFR 151.26
  - Approved by flag state / class society
  - Contact numbers correct
  - Immediate Actions List
- ◇ Vessel response plan (vessels carrying oil as secondary cargo) — 33 CFR 155.1045, 33 CFR 155.1030
- ◇ Transfer procedures — 33 CFR 155.720
  - Posted / available in crew's language
  - List of products carried by vessel
  - Description of transfer system including a line diagram of piping
  - Number of persons required on duty
  - Duties by title of each person
  - Means of communication
  - Procedures to top off tanks
  - Procedures to report oil discharges
  - VCS information — 46 CFR 155.750
  - Amendments authorized
  - Transfer flag and light

Chemical Cargo Records:

- ☐ Documents — 46 CFR 153.901
  - Readily available
  - Free of alterations

Notes: _____

○ Audits

- Internal audits conducted as specified by SMS
  NOTE: *Do NOT examine internal audit records.*
- External audit results reviewed
  - Status of open non-conformities relevant to deficiencies leading to detention
  - Status of implementation of corrective and preventative measure

○ SMS review conducted by Master in accordance with procedures in SMS

- Non-conformities identified
- Report of non-conformity prepared and sent in accordance with procedures established by SMS

Navigation Safety:

○ Test navigation equipment listed in Section 3 to the extent necessary to determine if equipment is operating properly.

○ Human Factors (spot-check): determine if deck officers are familiar with the following items: STCW Table A-II NVIC 3-98

- Operation of bridge control and navigational equipment
- Use of nautical publications and charts
- Ship maneuvering characteristics
- Lifesaving signals
- Bridge procedures, instructions, manuals, etc.
- Changing steering from automatic to manual and vice versa
- Preparations for arrival and departure
- Communications with engineroom
- Use of VHF
- Raising the alarm
- Abandon ship drill and fire drill

Notes: _____

Section 3: General Examination Items

Navigation Safety:

☐ Charts and publications for US waters/ intended voyage — 33 CFR 164.33

- Current and corrected charts
- US Coast Pilot
- Sailing directions
- Coast Guard Light List
- Tide tables
- Tidal current tables
- International Rules of the Road
- Inland Rules of the Road
- International Code of Signals
- Plotting equipment — 33 CFR 164.35

☐ Radar(s) and ARPA — 33 CFR 164.35, 33 CFR 164.37, 33 CFR 164.38

- 2 required if over 10,000 GT
- Operate independently
- ARPA acquires targets

☐ Compasses — 33 CFR 164.35

- Illuminated gyrocompass with repeater at stand
- Illuminated magnetic compass
- Current deviation table

☐ Test electronic depth sounding device and recorder — 33 CFR 164.35

- Accurate readout
- Test all transducers
- Continuous recorder (chart)

☐ Electronic position fixing device — 33 CFR 164.41

- Location accurate

Notes: _____

Section 7: Expanded Examination Items

Manuals and Instructions:

○ Check for presence of the following documents

- Instructions for maintenance and operation of all installations / equipment for fighting and containing a fire — SOLAS 74/78 II-2/20
- Training manual for lifesaving appliances — SOLAS 74/78 III/18.2
- Instructions for onboard maintenance of lifesaving appliances — SOLAS 74/78 III/51, SOLAS 74/78 III/19.3
- Stability booklet, associated stability plans and information — SOLAS 74/78 III/52, SOLAS 74/78 II-1/22, ICLL 66 Reg. 10

○ Cargo gear certificate

○ Human Factors — STCW Code

- Determine if the appropriate crew members are able to understand the information given in manuals, instructions, etc., relevant to the safe condition of the ship and its equipment, and that they are aware of the requirements for maintenance, periodical testing, training, drills, and recording of logbook entries.

Safety Management System (SMS):

NOTE: *Requirements and guidance for inspecting vessel Safety Management Systems are detailed in SOLAS 74/78, Chapter IX and NVIC 4-98.*

○ Documentation (may be in the form of a Safety Management Manual)

- Controlled documents
- Quality policy
- Master of vessel familiar with SMS
- Language understood by crew
- Documentation identifies:
  - Written procedures kept on board vessel
  - Essential or critical equipment identified (or a separate manual containing this information)
  - Procedures for reporting non-conformities
  - Company's designated person(s) (name or title, and address)

Notes: _____

◇ 9 GHz radar transponder (SART) — SOLAS 74/78 III/6.2, NVIC 9-93

- Vessels > 300 GT and < 500 require 1
- Vessels > 500 GT require 2
- Stowed so to be rapidly placed in survival craft, or stowed in survival craft

◇ NAVTEX — SOLAS 74/78 IV/7.1.4

◇ Radio installation — SOLAS 74/78 IV/6.2

- Marked with call sign

General Health and Safety

☐ Accident Prevention and Occupational Health

- Rails, guards, protective clothing and equipment, warning signs posted in crew work areas

☐ Crew accommodations — 46 CFR 32.40

- Habitable conditions
- Adequate lighting and ventilation
- Free of cargo and stores
- Individual berths

☐ Hospital space — 46 CFR 32.40

- Designated for ships ≥ 500 GT with 15 or more crew on voyage of more than 3 days
- Not used for stowage or berthing
- Properly operating toilet

☐ Galley — MSM Ch. B1.N.8

- Sanitary conditions
- Adequately equipped to prepare food
- Mess hall provided for crew

☐ Muster lists and emergency instructions

- Available for each person — SOLAS 74/78 III/8
- Posted in conspicuous places
- Shows crew member duties — SOLAS 74/78 III/53

Notes: _____

Section 6: Drills

◇ Fire Drill:

Initial notifications	Familiarity with duties	Space isolation
General alarms / signals	Familiarity with equipment	Smoke control
Crew response	Fire pumps started	Communications w/ bridge
Properly dressed / equipped	Two jets of water	
Language understood by crew	Fire doors and dampers	

(SOLAS 74/78 III/18.3; MSM Vol. II/D5.C.7.i; NVIC 6-91)

Location: _____ Time on Scene: _____

Notes: _____

Ground Tackle:

☐ Emergency towing arrangements — SOLAS 74/78 II-1/3-4
(vessels ≥ 20,000 DWT only)

- Approved by Administration

◇ Anchor and windlass (spot-check)

- Foundations
- Drive units
- Guards
- Covers for moving parts
- Brake pads
- Deck fittings
- Electrical (wiring) or hydraulic piping

◇ Mooring winches / capstans

- Foundations
- Cables / hooks
- Boom
- Brake
- Electrical (wiring) or hydraulic piping
- Ladders / rails

Lifesaving Equipment:

☐ Lifeboats / rescue boats

- Required number — SOLAS 74/78 III/26
- Hull integrity and fittings — SOLAS 74/78 III/19.2
- Engine starts within 5 minutes
  - Test engine at drill
    NOTE: *Do NOT test free fall lifeboat engine.*

Stbd Lifeboat	Port Lifeboat	Lifeboats
Engine equipped	Engine equipped	Wooden
Engine tested	Engine tested	Fiberglass
Lifeboat lowered	Lifeboat lowered	Steel
		Covered
Free fall lifeboat with rescue boat		

Notes: _____

☐ Oil transfer procedures properly amended — 33 CFR 155.750(a)

- Line diagram of VCS piping
  - Valves
  - Control devices
  - P/V valves
  - Pressure indicators
  - Flame arrestors (if fitted)
  - Detonation arrestors (if fitted)
  - Spill valves (if fitted)
  - Rupture disks (if fitted)
- Maximum allowable transfer rate _____
- Initial transfer rates for each tank _____
- Tables or graphs and VCS pressure drops
- Relief settings
  - Spill valves _____
  - Rupture disks _____
  - P/V valves _____
- Description of and procedures for operating VCS
  - Pre-transfer equipment inspection requirements
  - Vapor line connection
  - Closed gauging system
  - High-level alarm system
  - Independent automatic shutdown system (if fitted)

Cargo Boil-off Used As Fuel:

☐ General — 46 CFR 154.705

- Inert gas connection
- Fuel flow maintained when gas supply is cut off — 46 CFR 154.1854

Notes: _____

☐ Lifejackets—watchstanders and crew (spot-check)

- Condition — SOLAS 74/78 III/19.2
- Stowage — SOLAS 74/78 III/7.2.2
- Retro-reflective material — SOLAS 74/78 III/30.2.7
- Lights — SOLAS 74/78 III/27.2
- Whistles — SOLAS 74/78 III/32.1.6

☐ Line-throwing appliances (spot-check) — SOLAS 74/78 III/17

- 4 charges

☐ Pyrotechnics (spot-check) — SOLAS 74/78 III/6.3

- 12 red rocket flares

☐ Immersion suits and thermal protective aids (spot-check) — SOLAS 74/78 III/27.3

- Condition — SOLAS 74/78 III/19.2
- Retro-reflective material — SOLAS 74/78 III/30.2.7

Fire Protection:

☐ Fire control plan — SOLAS 74/78 II-2/20

- Permanently exhibited
- Language of flag state
- Copy permanently stored in weathertight container outside deckhouse

☐ Fire doors (spot-check) — SOLAS 74/78 II-2/46, SOLAS 74/78 II-2/47

- Machinery space and stair towers
- Not tied or blocked open
- Installed closure devices working

☐ Fire detection systems (spot-check)

- Smoke / fire alarms — SOLAS 74/78 II-2/13
- Remote pull stations — SOLAS 74/78 II-2/11.8
- Smoke / flame / heat detectors and sensors — SOLAS 74/78 II-2/53

Notes: _____

Vapor Overpressure and Vacuum Protection:

NOTE: *Requirements for vapor overpressure and vacuum protection are detailed in 46 CFR 39.20-11.*

- ☐ VCS system designed to discharge cargo vapor at 1.25 times the maximum transfer rate
- ☐ Design pressure verified
  - Spill valves, rupture disks, working vapor pressure set below maximum design pressure of VCS
- ☐ Maximum design vacuum pressure verified
- ☐ P/V valves settings verified
  - Pressure and vacuum annually pressure tested
  - Do not relieve at a pressure < 1.0 psig
  - Do not relieve at a vacuum < -0.5 psig
  - All P/V valves meet regulations or API 2000 standard — 46 CFR 162.017
  - A means to check the seating of the P/V valve if installed after 23 JUL 91

High and Low Vapor Pressure Protection:

NOTE: *Requirements for high and low vapor protection are detailed in 46 CFR 39.20-13.*

- ☐ Pressure sensing devices located in main vapor collection line
  - Tested to show accurate within 10% of the actual pressure
- ☐ Pressure indicator located at the cargo control station
- ☐ High pressure alarm
  - Audible and visual alarms where cargo transfer is controlled
  - Activates no higher than 90% of the highest P/V valve vacuum setting

Notes: _____

- ☐ Oil and hazmat
  - Fuel oil and bulk lubricating oil discharge containment — 33 CFR 155.320
  - Prohibited oil spaces — 33 CFR 155.470
- ☐ Oily-water separating equipment, bilge alarm, and bilge monitor — MARPOL Ax. I/16, 33 CFR 155.380
  - Alarm, recorder
  - Standard Discharge Connection — 33 CFR 155.430
- ☐ Garbage
  - Shipboard garbage properly disposed — MARPOL Ax. V/3
  - Incinerator — 33 CFR 151.63
    - Evidence of use (clinkers)
    - Safety of burner assembly
    - Electrical controls
  - Garbage Management Plan — MARPOL Ax. V/9
- ☐ Marine sanitation device
  - Type (I, II, or III) — 33 CFR 159.7
  - Nameplate — 33 CFR 159.55
  - Placard — 33 CFR 159.59

Machinery Spaces:

- ☐ Main and auxiliary machinery installations
  - General housekeeping — SOLAS 74/78 I/11(a)
  - Fire hazards
  - Shock and electrical hazards — SOLAS 74/78 II-1/45.1
  - Personnel hazards (moving parts not protected, hot surfaces, etc.) — SOLAS 74/78 II-1/26
    - Leaking fuel oil piping or fittings
    - Sea chests, sea valves / spool pieces in good condition
  - Tank tops and bilges free of oil — SOLAS 74/78 II-2/15
  - Watertight doors — SOLAS 74/78 II-1/23
    - Hand / power operation
    - Local / remote control
    - Alarm

Notes: _____

- ☐ Drains fitted in low points of system
- ☐ Piping electronically bonded to hull and electrically continuous
- ☐ VCS able to be isolated from IGS with isolation valve
- ☐ Cargo tank venting able to be isolated from VCS
- ☐ Manual isolation valve at each vessel vapor connection
  - Position of isolation valve verified by:
    - Markings
      OR
    - Position of stem
- ☐ Last meter of piping before connection
  - Painted red / yellow / red
  - Labeled “vapor”
- ☐ Vapor connections
  - Stud 0.5 X 1.0 inches at 12 o’clock position on the flange in line with bolt pattern
- ☐ Vapor hoses
  - Annually hydrostatically tested to 1.5 X MAWP (also vapor collection arm)
  - Design burst pressure of 25 psig
  - MAWP of 5 psig
  - Capable of withstanding 2 psig vacuum without collapsing or constriction
  - Electrically continuous with a maximum resistance of 10,000 ohms
  - Resistant to abrasion and kinking
  - Last meter of painted red / yellow / red and labeled “vapor”
- ☐ Saddles available for support of VCS hoses

Notes: _____

Section 4: Cargo Operations for Chemical / Gas Carriers

Bulk Liquid, Liquefied Gas, or Compressed Gas Hazardous Materials:

NOTE: *If vessel carries cargo listed in 46 CFR Part 154, use the requirements under “Bulk Liquefied Gases” at the end of this section.*

- ☐ Containment
  - Type
    - I — 46 CFR 153.230
    - II — 46 CFR 153.231
    - III — 46 CFR 153.232
  - Separation of cargo tanks / other spaces — 46 CFR 153.233
  - Piping location restriction exemptions — 46 CFR 153.235
  - Materials
    - Prohibited — 46 CFR 153.236
    - Required — 46 CFR 153.238
    - Cast iron — 46 CFR 153.239
- ☐ Tanks
  - Double bottom or deep tanks — 46 CFR 153.250
  - Independent tanks — 46 CFR 153.251
  - Access — 46 CFR 153.252
  - Trunks, domes, and openings — 46 CFR 153.254, 46 CFR 153.256
  - Linings — 46 CFR 153.266
- ☐ Piping
  - Design — 46 CFR 153.280
  - Independent tanks — 46 CFR 153.281
  - Filling lines — 46 CFR 153.282
  - Separation — 46 CFR 153.292
  - Marking — 46 CFR 153.294

Notes: _____

☐ Safety equipment — 46 CFR 154.1400

- Required safety equipment based on cargo capacity (see the following table)
  - Vessel's cargo capacity is < 25,000 cubic meters — 46 CFR 154.1400(a)
  - Vessel's cargo capacity is ≥ 25,000 cubic meters — 46 CFR 154.1400(b)
- Respiratory equipment — 46 CFR 154.1405
  - Additional required equipment on board
- Decontamination shower — 46 CFR 154.1410
  - Shower and eye wash on weatherdeck
  - Properly marked
- Equipment locker
  - Required equipment stowed — 46 CFR 154.1430

Equipment	Amount Required for Specific Cargo Capacities		
	< 25,000 cubic meters	≥ 25,000 cubic meters	Table 4 (special requirements)
30-minute SCBA	6	8	3
SCBA spare bottles	9	9	9
Steel-cored lifeline	6	8	3
Explosion-proof flashlight	6	8	3
Fire axes	3	3	0
Helmets	6	8	3
Boots and gloves	6	8	3
Goggles	6	8	3
Heat-resistant outfits	3	5	0
Chemical-protective outfits	3	3	3

Notes: _____

☐ Tank venting

- Safety relief valves only
- Type
  - B/3 vents — 46 CFR 153.350
  - 4m vent — 46 CFR 153.351
  - High-velocity vents — 46 CFR 153.353
- B/3 and 4m outlets — 46 CFR 153.352
  - Vertical discharge
  - Prevent precipitation from entering
- No restrictions — 46 CFR 153.360
- System drains — 46 CFR 153.362
- Pressure vacuum valves — 46 CFR 153.355
  - Location
  - Requirements — 46 CFR 153.368
  - Set pressures > .5 psi
  - Date last tested _____
- Liquid overpressurization — 46 CFR 153.365
  - Control system meets 46 CFR 154.408
    - Yes
    - No
  - Spill valve meets ASTM F-1271
    - Yes
    - No
- Special requirements — 46 CFR 153.372

☐ External examination of inert gas system — 46 CFR 32.53; MSM Vol. II Ch. C5

- Piping and components
- Scrubber
- Fans
- Valves
- Expansion joints
- Free of corrosion or leakage

Notes: _____

☐ Liquid level gauging

Open — 46 CFR 154.1305

Restricted

Closed
- – Date last calibrated and tested _____
- – Maximum operating pressure _____

- Closed gauge shutoff valve — 46 CFR 154.1310
- Restricted gauge excess flow valve — 46 CFR 154.1315
- High liquid level alarm system — 46 CFR 154.1325
  - – Independent of gauging system
  - – Set below 100% liquid full
  - – Activates audible and visual alarms upon activation of quick-closing valves
  - – Witness operational tests

☐ P/V protection — 46 CFR 154.1335

- At least 1 high pressure sensor
  - – Actuates below tank MARVS
  - – Actuates audible and visual alarms at cargo control station and remote group alarm in wheelhouse
  - – Witness operational test
- At least 1 low pressure sensor
  - – Actuates audible and visual alarms at cargo control station and remote group alarm in wheelhouse
  - – Witness operational test
- Manifold pressure gauge fitted where required

☐ Temperature measuring devices — 46 CFR 154.1340

- Bottom and maximum liquid level locations
- Cargo control station readouts
  - – Audible and visual alarms in cargo control room and wheelhouse
  - – Witness operational test

Notes: _____

☐ Temperature control systems — 46 CFR 153.430

- Standby cooling system — 46 CFR 153.432
- Refrigerated cargo tanks
  - – Alarms — 46 CFR 153.438
    - Pressure
    - Temperature
  - – Witness operation
- Fluid compatibility with cargo — 46 CFR 153.436
- Remote temperature sensors — 46 CFR 153.440

☐ Flammable or combustible cargoes

- Weatherdeck fire protection system — 46 CFR 153.460
- Electrical bonding of independent tanks — 46 CFR 153.461
- Vent discharge 10 meters from ignition source — 46 CFR 153.463
- Vapor detector — 46 CFR 153.465
  - – 1 fixed
  - – 1 portable
  - – Witnessed calibration

☐ Emergency equipment

- Personnel emergency and safety equipment — 46 CFR 153.214
  - – Two stretchers or wire baskets
  - – Self-contained breathing apparatus (SCBA) with 5 refill tanks; date professionally serviced _____ — BCH/3.16.8 & IBC/14.2.6
  - – Overalls
  - – Boots
  - – Long-sleeve gloves
  - – Goggles
  - – Steel-cored lifeline with harness
  - – Explosion-proof lamp
  - – First aid equipment
  - – Inspected every 30 days — BCH/3.16.8 & IBC/14.2.6
- Safety equipment lockers — 46 CFR 153.215
  - – Minimum of two
  - – Accessible
  - – Markings
- Shower and eyewash fountains — 46 CFR 153.216

Notes: _____

☐ Atmospheric control (hold and interbarrier spaces) — 46 CFR 154.902

Vessel carries flammable cargoes with full secondary barriers

- Inert gas system
  - At least one check valve in cargo area to prevent backflow
  - Inert gas has < 5% oxygen
  - Audible and visual alarm set at 5%
  - Inerted spaces fitted with proper relief devices
- Stored gas
  - Must meet 46 CFR 154.1848

Vessel carries flammable cargoes with partial secondary barriers

- Meets requirements of full secondary barriers with the capacity to inert largest hold and interbarrier space, AND either
  - Meets 46 CFR 154.1848 OR
  - Has air drying system — 46 CFR 154.902(c)(2)

Vessel carries nonflammable cargoes with secondary barriers

- Meets requirements of full secondary barriers OR
- Has air drying system — 46 CFR 154.902(c)(2)

☐ Electrical (gas-dangerous space or zone) — 46 CFR 154.1010

- Intrinsically safe
- Only specific explosion-proof equipment in cargo handling rooms, cargo hose storage rooms, spaces with cargo piping, and gas-dangerous zones on the weather deck
- Only through runs of cable in cargo hose storage rooms, spaces with cargo piping, and gas-dangerous zones on the weather deck

Notes: _____

Bulk Liquefied Gases:

NOTE: *Vessels carrying bulk liquefied gases must meet the requirements of 46 CFR Part 154.*

☐ Cargo piping — 46 CFR 154.310

- Connections

☐ Pump and compressor rooms — 46 CFR 154.315

- If prime mover is in adjacent space
  - Bulkhead / deck is gas tight
  - Positive pressure seal(s)

☐ Control stations — 46 CFR 154.320

- Above weather deck
- Gas-safe
- Instrumentation

☐ Openings — 46 CFR 154.330

- Distance from athwartships bulkhead > 10 feet
- Fixed port lights
- Gaskets on wheelhouse doors and windows
- Air intakes

☐ Air locks — 46 CFR 154.345

- Two steel, self-closing doors, with no hold-open devices
- Audible / and visual alarms
- Mechanically ventilated from a gas-safe place
- Air pressure in air lock is > gas-dangerous space, but < gas-safe space
- Vapor leak monitor
- Automatic power cut-off in gas-safe space
- Witnessed operational tests

☐ Liquid pressure relief — 46 CFR 154.517

- Date last tested and certified _____
- Piping relief valves discharge — 46 CFR 154.519
  - Cargo tank
  - Vent mast
  - Suction (if on cargo pump)

Notes: _____